Wind Applications in Village Power

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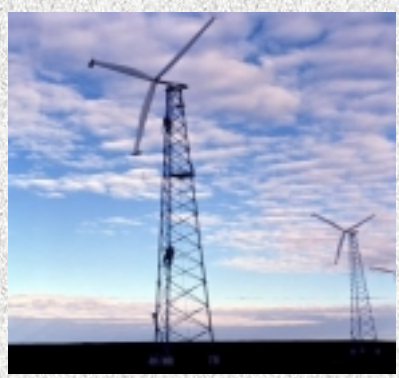
Remote Use of Large Wind Turbines

- Kotzebue Electric Association wind/diesel system for the Inupiat Eskimo village of 3,000 people
- 10 Atlantic Orient Corporation 50-kW wind turbines installed with multi-megawatt diesels
- Located above the Arctic Circle in harsh climatic conditions
- Large wind diesel systems with turbines up to 100s of kW can be used to power rural communities with isolated distribution grids.
- The addition of large wind systems to isolated diesel systems can significantly reduce fuel consumption and in many cases provide energy at a lower life-cycle cost than diesel power systems alone.



Atlantic Orient Company AOC 15/50, 50-kW turbines in Kotzebue, Alaska

Village of Las Araucarias and the installed power system

Remote Use of Small Wind Turbines

- Village of Las Araucarias, a remote forest community in southern Chile consisting of a health post, school, and 17 homes
- Uses a Bergey Windpower Excel 7.0-kW turbine, a TRACE inverter, Trojan L-16 batteries, and a Honda autostart generator
- The effective use of small wind turbines can provide cost effective, 24-hour power to communities that are off grid.
- Wind power can reduce the dependence on remote diesels, thus reducing maintenance and other life-cycle system costs.
- Other off-grid uses of wind energy include water pumping and water purification, ice production, battery-charging stations for single-family, low-income homes, and distributed power.

Use of Micro Wind Turbines

- Coastal ecotourism site of Pez Maya is part of a national park in the Yucatan Peninsula of southern Mexico.
- Two Southwest Wind Power AIR Marine 403 turbines, battery bank, and Trace inverter operate without diesel backup.
- Small turbines can provide single-point power to homes, rural schools, and other small loads where a poor solar resource (e.g., Southern Chile) makes the use of photovoltaics inappropriate.
- Simple DC system architectures make the systems easy to install and, when combined with an inverter, they provide high quality power.
- Per-watt cost is very low compared to all other alternatives.

Pez Maya isolated power system for small load applications

Status

- Wind systems can supply power needs for many remote applications, including residential electricity, water and ice production, battery-charging stations, and whatever power is needed in remote areas.
- The development of international standards and turbine testing has helped to ensure high-quality turbine production and performance.
- A large range of turbine sizes from small, 18-watt micro turbines to larger turbines for use in all rural applications is available.
- Wind energy is an economical renewable energy technology and may be the least-cost alternative; indeed, depending on the particular wind resource, it may be the most economical.